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The bottom line on solar power

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To the editor:

The April 16 commentary by Rose McKinney-James, "Stewardship good for the bottom line," was a self-serving call for a new socialist holiday called Earth Day. It was also designed to boost her company's bottom line by calling for more government subsidies for solar energy technology.

Ms. McKinney-James is the CEO of the Corporation for Solar Technology and Renewable Resources. Democrats in the Legislature and in other state government agencies have promised that 10,000 rooftop solar systems will be installed by 2010, subsidized by taxpayers.

Ms. McKinney-James never mentioned that it takes about 10 years for a rooftop solar system to pay for the energy spent in fabricating the system and that the economic return on investing in such a system is highly negative.

Ms. McKinney-James also recommends using solar energy for all our electric power and heating needs. She wrote: "The energy generated by one solar day in Nevada would satisfy all of America's electrical demands."

Solar energy generates about 125 watts per square foot at its zenith on the outer edge of the stratosphere. By the time the energy reaches the Earth's surface, this input falls to about 87 watts per square foot. Since there are only nine daylight hours in a average day, this maximum average energy input is really only 32 watts per square foot per 24-hour period.

It gets worse. Energy from the sun is not consistent throughout the day. The sun goes from zero degrees above the horizon at sunrise, moves higher during

the day, and then falls back to zero degrees at sunset. As a result, the maximum average energy input drops to about 20 watts per square foot.

There are foggy, cloudy and rainy days, dropping the input average to only 14 watts per square foot. That average drops further to only 7 watts per square foot, because the overall efficiency of the best solar energy collectors is about 50 percent.

Steam boilers, turbines and transmission lines operate at about 30 percent efficiency, so the net electric output from solar energy that reaches the Earth's surface comes to about 2 watts per square foot. Then there's the matter of storing energy while the sun is not shining, using huge water reservoirs with pumps and turbines.

Taking everything into account, the cost to consumers of one kilowatt-hour - which is now about five cents - would climb to about $2 if we relied exclusively on solar energy.

To supply electric power to a city with the population of Las Vegas takes a power plant with a capacity of about 2,000 megawatts, or 2,000 million watts. To produce this output, solar energy collectors would have to cover a surface of 36 square miles. Since there are now about 275 million people in the United States, the area reserved for solar collectors would amount to about 10,000 square miles.

Would a true environmentalist put 10,000 square miles of the Earth's surface into perpetual shade under the solar collectors, thus killing all living things under it and over it forever? Would a true Democrat force citizens to pay monthly electric bills of about $2,000? Would a true scientist replace nuclear power plants that produce no "greenhouse" gases and that are the safest machinery ever invented in human history by placing more than 10,000 square miles of America in perpetual darkness?

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